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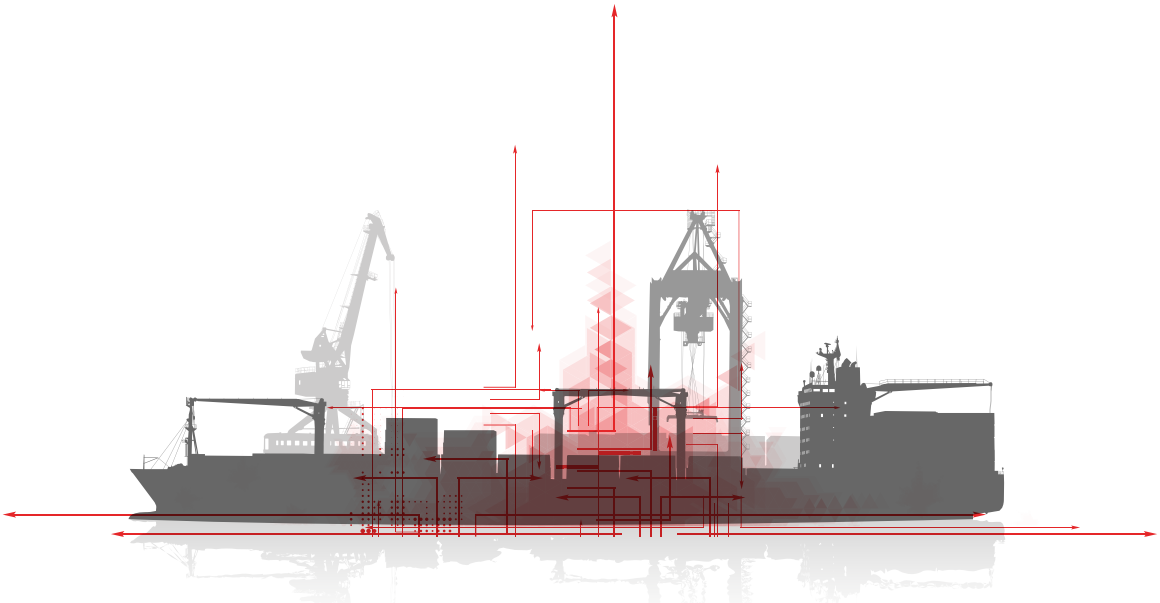
Thinking smart about knowledge sharing

Rebecca Morris *talks with Rob Zuidwijk and Bart Kuipers*



Companies active in the Port of Rotterdam are discovering the benefits of scientific collaboration – thanks to Erasmus Smart Port Rotterdam.

Down in the hinterland to the west of the Port of Rotterdam, the construction of two new major terminals is underway. Together with the three terminals currently in use at Maasvlakte 1, the construction of Maasvlakte 2 will result in a global container hub complex able to handle more than 30 million TEU per year by 2035.

Like every major undertaking, teething problems lie in store. Most challenging of all, how to organise the massive levels of internal container traffic expected to take place daily between Maasvlakte 1 and 2. Now – thanks to the prescient nature of scientific research and one large-scale research project – a possible solution is already in place.

'Science sees the problems ahead and develops solutions before they arise, solutions that are often outside the box,' explains Bart Kuipers, a senior research manager at Smart Port Rotterdam. 'In this case, a solution that will positively impact multiple firms in the area. It is an enlightening example of what can happen when the bridge between scientific innovation and business practice works as it should. And it's because of the existence of the Smart Port initiative.'

Erasmus Smart Port Rotterdam is a centre of excellence based at Erasmus University Rotterdam that acts as a central hub for research and education related to commercial ports and maritime issues. Founded in 2010, Smart Port represents one of the world's largest collaborations between local authorities, port organisations and interdisciplinary-faculty scientists dedicated to port-specific innovation. Some of the scientists involved are among those most cited in academic literature today – they are well-known even to companies whose day-to-day business is far removed from academia.

However, Smart Port Rotterdam is exceptional not only for the quality of its academic endeavours but also for the degree to which its ideas foster change at a grass roots level.

Scientists at Smart Port work together with counterparts at various firms within the logistics and port-related industries, including the ▸

Thinking smart about knowledge sharing *(continued)*

***Rebecca Morris** talks with Rob Zuidwijk and Bart Kuipers*

chemical industry – a collaboration established by academics at Erasmus University and the Municipality of Rotterdam, as well as Deltalinqs, a lobby organisation representing companies in the port industry, and the Port of Rotterdam Authority. The interdisciplinary, problem-driven solutions produced by this collaboration have been embraced by local industry.

'One of the biggest problems you see in major container facilities is how to effectively manage the traffic between different terminals,' explains academic director of Smart Port, Professor Rob Zuidwijk. 'The standard solution in these situations is more roads, more infrastructure. But in one of our projects we were able to come up with a better solution, one that is considerably more economical.'

2. One, by Rick Jansen, won first prize in the Deltalinqs Smart Port thesis competition. Next to its scientific quality – it offered a viable solution to this important structural problem, proffering considerable benefits to the multiple organisation and stakeholders involved.

Competitive advantage

Major commercial ports have several special characteristics that make them particularly apt to benefit from scientific collaboration. Big problems frequently plague them, from congestion to pressure from competition to increasingly restrictive sustainability regulations. Low levels of R&D investment are frequent, like in many logistics industries, where an operative mindset prevails. Most companies operating at the port have head offices in other countries – making them far removed from the logistical operations at the terminals.

> *"Knowledge is one of the most important sources of competitive advantage for a port environment..."*
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> ***Bart Kuipers, Senior Research Manager, Smart Port Rotterdam***

The multidisciplinary project designed by Smart Port and the Port of Rotterdam Authority together with TU Delft and Hamburg University led to a number of theses investigating the most economical system for transporting the expected volumes of containers related to Maasvlakte

However, in a knowledge society – who knows more wins. 'Knowledge is one of the most important sources of competitive advantage for a port environment,' explains Kuipers. 'This is an environment where academic knowledge can help companies and the port itself to move ahead, access better and more economical ways of doing things, and gain competitive advantage.'

Historically, academics from Erasmus University have long conducted independent research with port companies and stakeholders, and in 2010, this interaction was scaled up and formalised. Companies and stakeholders wanted to tap into the expertise and opportunities available at a university located on the shores of their operations.

'This research has always been demand driven,' explains Zuidwijk. 'Companies want our input – including small and medium enterprises that don't have the time or money to invest in R&D.'

At today's Smart Port Rotterdam, monthly meetings, regular seminars, internships within companies and collaboration on major scientific projects make this one of RSM's most successful examples of knowledge transfer, exchange and application between science and practice. Over 24 academics and staff work together with port stakeholders and companies. Researchers hail from multiple schools and disciplines, including business and management, economics, public administration and law.

'Large-scale interdisciplinary collaborations on port research never really happened before and yet the magnitude of these issues was something best solved by people with different areas of academic expertise,'

says Zuidwijk. 'It is much more natural to bring together these capabilities when you meet regularly – you know what the bottlenecks are in certain firms and where the opportunities are to advance the industry.'

Making a name

Big companies and organisations including the Dutch institute for Advanced Logistics (Dinalog), Europe Container Terminals (ECT), the Broekman Group and the European Commission are currently engaged with Smart Port in major structural research projects addressing a number of specific problems – including increasing the sustainability profile of port activities.

One recent study conducted on inland shipping addressed the logistics of a strategic renewal plan for the sector. Barges shipping goods to and from the hinterland form a significant part of the port's lifeblood. Some of these vessels have been in operation for over 50 years, with engines that will soon no longer meet environmental regulations. Replacing them with a newer, cleaner fleet of vessels without disrupting the flow of cargo presented an unimaginably complex task.

Researchers at Smart Port applied themselves to the development of several blueprint transition scenarios designed to minimize disruption. One of these scenarios, presented to the firms involved, now forms the fundamentals of the new transition plan.

Regular Smart Port seminars with companies provide another valuable forum for knowledge exchange. 'We had a recent visit from Debjit Roy, an assistant professor in production and quantitative methods from the Indian Institute of Management in Ahmedabad, who gave a presentation to representatives of the container industry on his models for container terminal design,' says Zuidwijk. 'ABB Benelux is a huge company and a strategic supplier for container terminals, also for the new terminals currently being developed at Maasvlakte 2. ABB attended the presentation from Debjit Roy and it is likely that at least some of Roy's insights will eventually be incorporated into their plans, for instance in their terminal software. So you see these ideas are really reaching industry and the big suppliers.'

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Prof. Rob Zuidwijk, Academic Director, Smart Port Rotterdam

Not only is it a productive collaboration, but plans are also underway to expand Smart Port's partners to include other universities in the Netherlands, starting with TU Delft, which already collaborates with the Port of Rotterdam authority.

'Smart Port is really about linking the needs and knowledge of the port industry all around the world with academia,' says Zuidwijk. 'These scientists are at the forefront of their fields with a very strong international presence. And in the process of putting their own names on the map – they're helping Rotterdam retain its position as one of the world's most successful commercial ports.' ■

More information about Smart Port Rotterdam is available at WEB www.erim.eur.nl/smartport/